CLAIMS:

1. (CURRENTLY AMENDED) A computer-implemented method for improving compression for storage of storing a plurality of parallel data element sequences comprising:

   (a) creating a dictionary of unique values for each of said data element sequences, wherein each dictionary contains a numeric index for each unique value;

   (b) forming an n-ary tree with leaf and interior nodes wherein:

      (1) each said leaf node corresponds to one of said dictionaries,

      (2) each said interior node associates a numeric index with tuples of numeric indexes from other subordinate leaf or interior nodes, and

      (3) interior nodes are capable of storing one or more sequences of mutually-consecutive tuples distinctly from the other tuples by representing said sequences in a form that uses less storage space than representing said sequences as individual tuples.

2. (PREVIOUSLY PRESENTED) The method of claim 1, wherein each unique value of a leaf node or each unique tuple of an interior node is associated with a count of the number of times that value or tuple of values occurred in the parallel data element sequences.

3. (PREVIOUSLY PRESENTED) The method of claim 1, further including a means for efficiently processing a subset of a tree's leaves, comprising the following steps:

   (a) defining a gate field in one or more interior nodes,

   (b) setting the value of said gate field in each said interior node, to indicate which of said interior node's branches lead to leaf nodes in said subset,

   (c) following paths that lead to said leaf nodes, and

   (d) processing said leaf nodes encountered.

4. (PREVIOUSLY PRESENTED) The method of claim 1, further including using the length of at least one of said tuple sequences in the representation of one or more of said tuple sequences.

5. (PREVIOUSLY PRESENTED) The method of claim 1 further including a method for arranging said n-ary tree comprising the steps of:

   (a) defining a problem space comprising:

      (1) a set of states such that each state contains a set of leaves and zero or more interior nodes, each with two or more other nodes as children,

(2) a value function, giving a numeric ranking of the value of any state's design

(b) defining one or more operators that transform one state to another, and

(c) searching the problem space, starting from an initial state and applying operators to move to other states until a state with an acceptable n-ary tree design is reached.

6. through 10. (CANCELED)

11. (PREVIOUSLY PRESENTED) The method of claim 1, where said interior nodes are capable of storing one or more of said tuple sequences using a single tuple in combination with said tuple sequence length.

12. (PREVIOUSLY PRESENTED) The method of claim 3, further including using the length of at least one of said tuple sequences in the representation of one or more of said tuple sequences.

13. (CANCELED)

14. (CANCELED)

15. (CANCELED)

16. (PREVIOUSLY PRESENTED) The method of claim 5, where said method uses an estimate of interior node size, from a function of the sizes of said interior node's child nodes.

17. (CANCELED)